GUIDANCE FOR SMALL WATER SYSTEMS TO COMPLY WITH THE LEAD (Pb) AND COPPER (Cu) REQUIREMENTS

I. OVERVIEW

The first round of sampling was required to be completed by December 31, 1993, and the second round by June 30, 1994.

The lead and copper rule requires:

A. Selecting sampling sites;
B. Collecting and analyzing samples;
C. Determining if the 90th percentile sample exceeds the lead action level of 0.015 mg/L (15 ppb) or the copper action level of 1.3 mg/L (1.3 ppm);
D. Reporting the results; and
E. Taking any necessary follow-up action.

II. NUMBER OF SAMPLES

The necessary number of samples depends on the number of people served by the system. Samples must be taken from the following number of sampling sites:

Number of People served	Number of samples
501 to 3,300	20
101 to 500	10
Less than or equal to 100	5

III. WHERE TO SAMPLE

A. Sampling sites shall be selected based on a tier system. If possible, all samples should be taken from tier I sites. If there are not enough tier I sites, samples should be taken from tier II sites, etc.

1. Tier I consists of single family structures that contain:
   a. lead pipes; and/or
   b. copper pipes with lead solder installed after 1982 through 1988; and/or
   c. pipes served by a lead service line.

If lead service lines are present, at least half of the samples must come from the sites with lead service lines.

2. Tier II consists of buildings and multiple family residences that contain:
   a. copper with lead solder installed after 1982 through 1988; and/or
   b. served by a lead service line.

3. Tier III consists of single family residences that contain copper pipes with lead solder installed before 1983.

4. In the event that there are insufficient tier I, II and III sites, sites should be selected in the following priority:
   a. copper pipe installed after 1988
   b. galvanized piping
   c. plastic piping

Sampling sites should be spread throughout the water system, if possible.

IV. HOW TO SAMPLE

Note: Each round of lead and copper sampling should be done at the same residences as the initial monitoring whenever possible. Letters are usually sent to find volunteers to participate in the sampling and then residents collect the samples themselves. Sample bottles and instruction are then retrieved by employees.

A. TAP/FAUCET SAMPLES

1. Samples are to be taken from kitchen or bathroom taps/faucets. Do not sample from taps that have point-of-use treatment (e.g. water softeners; carbon filter systems, etc.). If possible, remove any screens, filters, or aerators from faucet nozzle prior to sampling.

2. All samples must be one liter in volume.

3. The sampling tap must not be used for a ***minimum of 6 hours and a maximum of 18 hours prior to sampling.*** If it is uncertain when the tap was last used, it should be flushed and the water in the system should be left to stand still for the required six hours prior to sampling. Recommendation: Collect samples first thing in the morning.

4. Samples must be the first water drawn from the tap.

5. Sample analysis must be conducted by a laboratory certified by the state to conduct drinking water lead and copper analyses.

B. LEAD SERVICE LINES SAMPLES

The objective is to attempt to obtain a sample of the water that was sitting in the lead service line portion of the pipe for at least six hours.

1. Samples should be taken in one of the following two ways:

   a. sample from the tap after flushing a volume equal to the volume of water between the tap and the service line. The volume shall be calculated based on the interior diameter and length of the pipe between the tap and the lead service line or

   b. tap directly into the lead service line.

2. All samples must be one liter in volume.

3. The water from the system must not be used for a ***minimum of 6 hours and a <u>maximum of 18 hours</u> prior to sampling.*** If it is uncertain when the tap was last used, then it should be flushed and the water in the system should be left to stand still for the required six hours prior to sampling.

4. Sample analysis must be conducted by a laboratory certified by the state to conduct drinking water lead and copper analyses.

V. <u>HOW TO REPORT SAMPLES</u>

Upon receiving the sample analysis from the laboratory, calculate the 90th percentile lead and copper samples. This is done as follows:

A. The results of all samples shall be placed in ascending order from the sample with the lowest concentration to the sample with the highest concentration. Each sampling result shall be assigned a number, ascending by integers beginning with 1 for the sample with the lowest concentration. The number assigned to the highest concentration shall therefore be the total number of samples taken.

B. The number of samples taken (n) is multiplied by 0.9. This total will yield a number. The sample value that corresponds to this number is the 90th percentile sample and the value that should be reported.

Example 1: If ten samples are taken 10 x 0.9 = 9. The 9th highest sample value reported is the 90th percentile.

No. Lead (mg/l)

1	0.008	4	0.009	7	0.014	10	0.030
2	0.008	5	0.010	8	0.016		
3	0.009	6	0.011	***9***	***0.018***	***90th Percentile***	

In this example the 90th Percentile exceeds the Lead Action Level of 0.015 mg/l.

Example 2: If five samples are required: 5 x 0.9 = 4.5. The average of the 4th and 5th highest sample value reported is the 90th percentile. It would be determined as follows:

No. Lead (mg/l)

1	0.008	3	0.010	***5***	***0.016***
2	0.009	***4***	***0.013***		

90th percentile = $\frac{(0.013 + 0.016}{2} = \frac{0.029}{2}$ = ***0.0145 mg/l***

In this example the 90th Percentile is below the Lead Action Level of 0.015 mg/l.

Note: If the 90th percentile for lead is 0.0154 mg/l or copper is 1.34 mg/l, then the result would be rounded down to 0.015 mg/l and 1.3 mg/l, respectively, which do not exceed the action level.

VI. WHAT TO DO NEXT

A. At this point you should have chosen sites, conducted sampling, and calculated the 90th percentile for lead and copper. Next, complete the remaining sections of EPA Form 141-A and return it to:

Nevada Division of Environmental Protection
Bureau of Safe Drinking Water
901 S. Stewart Street, Suite 4001
Carson City, NV 89701

Attached is EPA Form 141-A. Be sure to complete the form, and sign and date before returning.

B. For water systems that do not exceed action levels.

1. If the system does not exceed either the lead or copper action levels at the 90th percentile during the first round of sampling, the system must sample again for a second initial monitoring round during the subsequent 6 month period at the same locations if possible.

2. If the system does not exceed either the lead or copper action levels at the 90th percentile in both the first and second rounds of sampling, the sampling may be reduced to the following number of sites **once** a year. Samples for reduced monitoring must be taken during the months of June, July, August, or September:

Number of People Served	Number of sites
501 to 3.300	10
101 to 500	5
Less than or equal to 100	5

The reduced sampling continues unless the action levels at the 90th percentile are exceeded.

3. After completing three years of lead and copper monitoring without exceeding lead and/or copper action levels, the system qualifies to begin triennial monitoring.

Example 3: The Small Water System - 300 people served.
- System conducts its first sampling of 10 sites in 8/96.
- ◆ 90th percentile does not exceed the action levels for either lead or copper.
- 2nd Round sampling is done 2/97 (between 1/1/97 and 6/30/97).
- ◆ 2nd Round 90th percentile does not exceed the action levels.
- Sampling reduced to 5 sites once/year (to be done in summer months).
- Next round of sampling must be conducted 7/97, 8/97, 9/97, or 6/98.

C. For water systems that do exceed action levels.

If a system exceeds either the lead or copper action level at the 90th percentile in any round of sampling, the system must conduct water quality monitoring. If the lead action level at the 90th percentile is exceeded, Public Education materials must also be distributed.

SAMPLE SITE JUSTIFICATION METHOD CERTIFICATION

**** Please make copies of this form for your files to submit to Bureau of Health Protection Services with future rounds of sampling.**

System's Name: _____ Type: CWS NTNCWS

Address: _____ Size: >100,000
50,001 to 100,000
_____ 10,001 to 50,000
3,301 to 10,000
_____ 501 to 3,300
Telephone Number: _____ Fax Number: _____ 101 to 500
≤ 100

System ID number: _____ Sampling Round: First, Second, Reduced Annual, Reduced Triennial

Contact Person: _____

THE LAB RESULTS OF LEAD AND COPPER TAP WATER SAMPLES MUST BE ATTACHED TO THIS DOCUMENT

90% Pb level _____

# of samples required _____ # of samples submitted _____ 90% Cu level _____

TARGETING CRITERIA

# of single-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1) _____

# of multi-family structures with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 1) _____

# of buildings with copper pipes with lead solder installed after 1982 or lead pipes and/or lead service lines (Tier 2) _____

# of sits that contain copper pipes with lead solder installed before 1983 (to be used only if other conditions are exhausted) (Tier 3) _____

TOTAL _____

Explanation of Tier 2 and Tier 3 sites (attach additional pages if necessary)

_____
_

_____
_

_____
_

LEAD SERVICE LINE SITES

# of samples required to be drawn from lead service line sites _____
# of samples actually drawn from lead service line sites _____
Difference (explain differences other than zero) _____
Method used to identify lead service line sites (attach additional pages if necessary):

_____
_

SAMPLE SITE JUSTIFICATION/COLLECTION METHOD CERTIFICATION

THE RESULTS OF WATER QUALITY PARAMETER (WQP) SAMPLES MUST BE ATTACHED TO THIS DOCUMENT

# of samples required to be collected _____

# of WQP entry point samples required to be collected _____

# of WQP tap samples actually collected and submitted _____

# of WQP entry point samples actually collected and submitted _____

CERTIFICATION OF COLLECTION METHODS

I certify that:

Each first draw tap sample for lead and copper is one liter in volume and has stood motionless in plumbing system of each sampling site for at least six hours.

Each first draw sample collected from a single-family residence has been collected from the cold water kitchen tap or bathroom sink tap.

Each first draw sample collected from a non-residential building has been collected at an interior tap from which water is typically drawn for consumption.

Each first draw sample collected during an annual or triennial monitoring period has been collected in months of June, July, August, or September.

Each resident who volunteered to collect tap water samples from his or her home has been properly instructed by [insert water system's name]_____ in the proper methods for collecting lead and copper samples. I do not challenge the accuracy of those sampling results. Enclosed is a copy of the material distributed to residents explaining the proper collection methods, and a list of the residents explaining the proper collection methods, and a list of the residents who performed sampling.

CHANGE OF SAMPLING SITE

Original site address:
_____

_____
_

New site address:
_____

_____
_

Distance between sites (approximately):
_____

Targeting Criteria: NEW: OLD:

Reason for change (attach additional pages if necessary):

_____
_

_____
_

_____
_

_____
_

_____
_

SIGNATURE:
_____

_____ _____ _____
NAME (PRINT) TITLE DATE

TRH/sdc:PBCU.APP